✅ **Latest release**

Monthly Employee Earnings Indicator methodology

Reference period April to September 2023

Released 21/11/2023

> **On this page**
>
> [How the data is collected](#)
> [How the data is transformed](#)
> [How data is released](#)
> [Factors affecting interpretation](#)
> [Glossary](#)

The Monthly Employee Earnings Indicator (MEEI) is a measure of wages and salaries based on the Australian System of National Accounts 2008 and the Australian Conceptual Framework for Measures of Employee Remuneration. The MEEI presents percentage change in wages and salaries paid to employees by employers between the current and previous month and annual change (same month, last year).

The Australian Taxation Office (ATO) receives payroll information from employers with Single Touch Payroll (STP) enabled payroll and accounting software each time the employer runs its payroll. The ATO provides selected employer and job level data items from the STP system to the Australian Bureau of Statistics (ABS) to produce statistics.

The estimates for the MEEI are derived from STP data and represent the wages and salaries paid to employees by employing businesses and organisations within Australia in the reference month.

This release includes experimental estimates for the dollar value of wages and salaries paid by employers to employees in the reference month, rather than an index. In the future, the

MEEI outputs will be expanded to include separate components of wages and salaries (such as overtime and bonuses) as well as additional remuneration components (such as termination payments).

How the data is collected

Scope and coverage

The scope of the MEEI is active employing businesses and organisations in the Australian economy. The population is represented in the form of a frame drawn from the Australian Bureau of Statistics Business Register (ABSBR). The ABSBR is primarily based on Australian Business Number (ABN) registrations to the Australian Business Register, which is managed by the ATO. To support alignment with other ABS economic indicators, the MEEI takes its population snapshot (which statisticians usually refer to as a 'frame') on a quarterly basis.

Not all employing businesses report to STP regularly and the use of a frame and other statistical methods enable wages and salaries to be estimated for all employing businesses and organisations. This is different to the wages series previously included in the [Weekly Payroll Jobs and Wages in Australia (/statistics/labour/jobs/weekly-payroll-jobs/week-ending-10-june-2023)](/statistics/labour/jobs/weekly-payroll-jobs/week-ending-10-june-2023) release, where the scope and population are the same, that is businesses and organisations reporting to STP.

A quarterly frame is used to maintain a contemporary view of businesses, ensuring that new businesses, changes in business structures and characteristics (such as industry, state and territory and employment size) are as up to date as possible. Employer characteristics are refreshed with each quarterly frame and are held constant between quarterly frames. When changes in the characteristics of businesses occur, there may be some visible impacts at the transition point in the reference months where frame information is updated (January, April, July, October) due to the difference between the consecutive frames.

Statistical units

The businesses on the ABSBR are separated using a two-population model. The two populations are known as the profiled population and the non-profiled population. The main distinction between businesses in the two populations relates to the complexity of the business structure, diversity of the activities undertaken and the degree of maintenance required to reflect the business structure for statistical purposes.

Non-profiled population

Most businesses included on the ABSBR are in the non-profiled population. These

businesses usually have simple structures that are suitable for ABS statistical purposes at the ABN level. Businesses included in the non-profiled population have homogeneous activity (i.e., operate predominantly in one industry sub-division), however, they can have large employment. For the non-profiled population, one ABN equates to one business.

Profiled population

For some businesses, the ABN unit is not suitable for ABS economic statistics purposes. The ABS maintains its own economic units structure through direct contact with businesses and these businesses constitute the profiled population which consists of large, complex and diverse groups of businesses. This population is represented by Type of Activity Units (TAUs) which consist of one or more business entities, sub entities or branches of a business that can be grouped according to production activity and can report a minimum set of data items. These TAUs are classified according to the industry of the main activity. The relationship between TAUs and their associated legal entities (ABNs) may be one-to-one, many-to-one, or one-to-many.

In the MEEI, the statistical unit that captures the employing activity consists of ABNs from the non-profiled population and TAUs from the profiled population. Each statistical unit is classified to its state or territory, industry and employment size according to information sourced from the ABSBR.

State and territory geography reflects a business' employing locations, not the residential address of their employees.

Defining wages and salaries and other types of remuneration

Wages and salaries included in this indicator are based on the Australian System of National Accounts 2008 and the Australian Conceptual Framework for Measures of Employee Remuneration.

The STP reported wages and salaries are in scope of these estimates. Wages and salaries exclude payments to employee's superannuation as well as severance and termination payments. Wages are gross amounts, prior to taxation and deductions and include:

- wage and salary payments (including payments to Australian residents working in a foreign country who were paid through an Australian payroll, and bonuses where they are reported in the same field as normal payments),
- allowances (such as overtime, working weekends or public holidays, working away from home),
- the value of payments in kind (where a fringe benefit amount is recorded).

More specifically, the following STP reported income items are included in the production of wages and salaries estimates:

- gross income amount (including bonuses),
- allowance income,
- other income (not specified),
- foreign income amount including tax exempt income,
- Community Development Employment Project income.

An adjustment is made for the reportable fringe benefit tax (FBT) amounts (both taxable and tax exempt). FBT is predominantly merged into the STP reported data towards the end of the financial year and would distort the wages and salaries at this time. The application of the FBT factor to monthly reference periods is done as one of the final steps in transforming the aggregates and more detail is provided as part of the aggregate creation step.

How the data is transformed

The STP data is received in the form of millions of transactions of employer payments to employees. The ABS applies a series of transformations to this data to facilitate its use for statistical purposes.

The ATO provides STP transactions to the ABS on a weekly basis. Transactions are generally for payments of wages and salaries for a defined pay cycle period reported in the week. Weekly data can contain data for other forms of payments or corrections to previously reported transactions. Submissions of STP vary from employer to employer based on pay cycle frequency and reporting arrangements of individual employers, however, most report at the time the payroll is run. There can be reporting lags and other events that can affect regular employer reporting, which can result in revisions.

The following subsections describe the transformations used to produce the data for statistical purposes.

Calendarisation

The initial transformation step, "calendarisation" converts transactions to daily pay events for individual employees allowing the data to be aggregated to a longer period (calendar month).

This transformation is required as STP data are reported on a cash basis (the time when the payment was made) rather than an accrual basis (the time when the payment was earned). Production of real time estimates of labour market activity require the conversion of STP

data from a cash basis to an accrual basis. The "calendarisation" method breaks down all records to a common period (daily), which then allows the data to be aggregated to a longer period (e.g., calendar month).

There are some types of payments that cannot be attributed to a defined pay cycle period, such as backpay, hence these are shown when the payment is made. For the data included in this release, individual pay events are aggregated to a calendar month reference period.

Imputation

The STP reporting year is based on the July – June financial year. Within any given reference month, STP reporting may be incomplete for a range of reasons including, but not limited to:

- different business reporting habits,
- different pay cycle period reporting.

It has been observed that STP data for each month in a given financial year can be affected by updated STP data beyond the conclusion of that financial year.

In the first MEEI release in June 2023, the calculated daily rate was imputed up to 42 days forward, with conditions relating to:

- the last payment received,
- the job holder's pay frequency, and
- the data vintage used to compile the reference month.

This method resulted in a low rate of imputation and did not fully account for all pay period or business reporting frequencies.

It is particularly challenging to account for the reporting behaviours of around 700,000 reporting businesses within the STP dataset. The STP dataset is still relatively new and as such, the methods used to compile these experimental estimates are evolving.

From this release, the imputation method has been updated to better account for part period employer reporting in the latest 3 months of data. It achieves this by imputing the daily rate of a jobholder until the end of the reference month in which the jobholder last received a payment, unless they have a termination date and/or termination payment. Imputation is only applied in the latest 3 months of data. For example, in the 21 November 2023 release, imputation is only applied for the July, August and September 2023 reference periods.

The updated method is considered to improve the quality of the level estimates in the latest 3 reference months, but can affect interpretation of change in the first month of the 3 month imputation window. See the Imputation period section in [Factors affecting interpretation (/methodologies/monthly-employee-earnings-indicator-methodology/april-september-2023#factors-affecting-interpretation)](/methodologies/monthly-employee-earnings-indicator-methodology/april-september-2023#factors-affecting-interpretation) for more information.

Employers who have not reported for any employees during a reference month are not imputed, and are accounted for in a later process (weight adjustment).

Imputation is only applied to in scope earnings payments (wages and salaries). Other earnings payments such as lump sum leave are not imputed.

Imputation relating to new employees

No imputation is applied for new employees (related to existing or new employers) without historical payment information, until a pattern can be determined. This means that there can be a lag before a new employee contributes to the estimates (after their initial pay period). The lag is longer for new jobs with employers that have less frequent payment and reporting periods. No adjustment is applied to account for this new job lag.

Creating statistical unit level data

Once calendarisation and imputation are applied, the employee level data for the reference period is aggregated to the ABN used by the employer for STP reporting. This forms the core employer level data that are transformed to statistical unit level data.

For the non-profiled population (that is, businesses with a simple structure), the ABN is directly mapped to the statistical unit.

For the profiled population (that is, businesses with a complex structure), there can be many ABNs and the mapping of employer level data to the statistical unit is more complex. ABN level data is aggregated to the highest level of the ABS economic units model, the Enterprise Group (EG). The EG level data are then apportioned into one or more TAUs using a proration factor based on total Business Activity Statement wages and salaries and ABSBR employment.

All wages and salaries for statistical units in the non-profiled population (or ABN units) are attributed to the main state of operation of that business, regardless of business operations in more than one state or territory. For complex businesses (or TAUs) the employee earnings are further attributed to each state and/or territory in which they operate.

Weighting

Statistical units are stratified by state, industry and employment size. When employing businesses do not report to STP in a reference month (i.e., full non-response), a non-response adjustment (weighting) is applied to the data received from responding businesses to fully account for the employee earnings of the target population of all employing businesses.

Creation of aggregates

Statistical unit level data are aggregated to the output classifications of state/territory, industry division, employment size groups and sector.

FBT adjustment

Towards the end of the financial year, unadjusted STP data includes higher than usual changes in total wages and salaries paid. Most employers report lumped FBT payment amounts for eligible employees at the end of the financial year as part of FBT reporting obligations (particularly common in the Health care and social assistance industry). The inclusion of unadjusted FBT data in May and June reference months would significantly distort the wages and salaries paid for those months. Therefore, to remove the effect of these reporting arrangements, the ABS creates an adjustment factor to accrue the FBT amounts across all months of the relevant financial year. The adjustment is based at the stratum level (state/territory, industry, employment size).

Calendar adjustment

To improve the comparability of estimates between calendar months, an adjustment has been applied to account for the differing number of days in each month. The adjustment standardises all months to an average length of days and is known as calendar adjustment. This type of adjustment is usually done as part of seasonal adjustment, however the statistics in this release are not yet fully seasonally adjusted.

As the ABS consolidates its understanding of STP data, methods will be further enhanced to improve the quality of these statistics and maintain the relevance of this indicator. As updated methods are implemented, more information will be provided here.

How data is released

Summary of outputs

Each release contains both level estimates and percentage change movements for calendar month reference periods. Estimates are available for national, state and territory, [Australian and New Zealand Standard Industry Classification (ANZSIC) (/statistics/classifications/australian-and-new-zealand-standard-industrial-classification-anzsic/latest-release)](#) division, employment size and public/private sector, as outlined in the [Standard Economic Sector Classifications of Australia (/statistics/classifications/standard-economic-sector-classifications-australia-sesca/latest-release)](#) . In this release, data received around 6 weeks after the end of the latest reference month have been used to produce the estimates across the time series.

From the 21 November 2023 release, employment size groups for 0-4 and 5-19 employees have been collapsed into the 0-19 employees size group. This population is more challenging to compile estimates for, in addition to being more affected by lags in employer reporting to STP. Subsequently, these size groups see higher rates of both imputation and weight adjustment than other size groups. The ABS will continue to investigate improved methods which may enable the separate release of these employer size groups in the future.

Time series information

The estimates are presented as an original series only, as seasonally adjusted and trend estimates are not yet available. At least three years of reasonably stable data are required before seasonal patterns can be observed and adjusted for.

Coherence with other ABS releases

The methods adopted for the MEEI have been aligned as closely as possible to similar earnings statistics produced by the ABS. Changes in wages and salaries in these estimates may differ to other statistics due to differences in the concepts, scope and methodology used. For example, these estimates:

- contain a combination of administrative data collected for taxation purposes from employers, whereas other ABS data sources are compiled for the explicit purpose of producing statistics
- exclude unreported cash in hand payments which may be included in household and business surveys
- are not yet adjusted with respect to seasonality, unlike other Labour market releases
- do not account for hours worked, hours paid for, job attachment where a payment has not been made, or jobholders temporarily stood down without pay, or employment status of employees (i.e., full time or part time), which may be considered in other

Labour market measures.

Confidentiality

Legislative requirements to ensure privacy and secrecy of this data have been adhered to. In accordance with the Census and Statistics Act 1905, results have been confidentialised to ensure that they are not likely to enable identification of a particular person or organisation.

All personal information is handled in accordance with the Australian Privacy Principles contained in the Privacy Act 1988. For more information, see [ABS Privacy (/about/legislation-and-policy/privacy/privacy-abs)](/about/legislation-and-policy/privacy/privacy-abs) .

Acknowledgement of source

These estimates are based on Australian Business Register (ABR) data supplied by the Registrar to the ABS under A New Tax System (Australian Business Number) Act 1999 and tax data supplied by the ATO to the ABS under the Taxation Administration Act 1953. These require that such data is only used for the purpose of carrying out functions of the ABS. No individual information collected under the Census and Statistics Act 1905 is provided back to the Registrar or ATO for administrative or regulatory purposes. Any discussion of data limitations or weaknesses is in the context of using the data for statistical purposes and is not related to the ability of the data to support the ABR or ATO's core operational requirements.

The ABS would like to acknowledge the critical support from the Australian Taxation Office (ATO) in enabling the ABS to produce these statistics.

Factors affecting interpretation

MEEI estimates are derived from data collected via the STP system, which effectively supports employer reporting obligations and ATO operational requirements through enabled software.

STP was not primarily designed to support the production of statistics, hence some inherent characteristics contribute to variability in the estimates and revisions between releases.

To help users understand this complexity, different factors affecting the interpretation of MEEI estimates are explained below.

Revisions

Revisions are a change to a previously published value and may arise due to a variety of reasons. They can reflect both the complexity of measurement, and the need to balance

precision and timeliness to maximise the utility of the indicator.

The magnitude of revisions will vary between reference periods and may relate to one or more of the following factors:

- updates in the STP data including receipt of updated, more complete or resubmitted data
- removal of previously imputed data
- changes in implemented methods or processes
- changes in historical data adjustments.

Compositional change

When comparing the change in wages and salaries paid by employers between any two periods, interpretation can be complicated by variation in its composition.

Aggregate estimates in this release are compiled from over 11 million jobs and movements can include changes in composition (which are not quantified), unlike the ABS Wage Price Index which presents changes in the price of labour unaffected by compositional shifts in the labour force, hours worked or employee characteristics.

Variability in wages and salaries paid by employers between reference periods may be due to:

- variations in demand for casual staff
- changes in hours worked
- payment of penalty rates for public holidays
- the inclusion of cyclical payments such as bonuses, commissions or lump sum payment of leave loading
- the inclusion of irregular payments such as overtime, ad hoc or one-off payments relating to employee recognition or enterprise agreement sign-on
- changes in the underlying composition of the business population (birth of new and/or closure of businesses) or changes in their characteristics.

Compositional change can differ between industries and states and territories, particularly when there are localised labour market challenges.

Seasonality

These estimates are presented as an 'original' data series, and do not include seasonally adjusted or trend data time series found in other labour statistics releases (e.g. Labour

Force, Australia).

STP is a relatively new program (and data source). Generally, three to five years of data are required before good seasonally adjusted data can be produced, hence it is not yet possible to produce a seasonally adjusted series (with seasonal elements removed) or trend series (with both the seasonal elements and irregular fluctuations removed). This means that variations in these estimates may reflect seasonal changes in the labour market in addition to other labour market shocks (such as COVID-19 related impacts) in the economy.

Seasonal characteristics may be seen:

- around national public holidays, where increases in the wages and salaries paid by employers may be evident in industries where penalty rates are paid.
- ahead of the Christmas period, where considerable labour market activity in a range of industries can temporarily increase the number of employees paid and/or hours worked.
- across school holiday periods, where some industries experience lower business activity. This is particularly pronounced in the holiday period after Christmas in the payroll job estimates of the Weekly Payroll Jobs release, and may result in a decrease in the wages and salaries paid by employers in some industries.
- in industries where periodic bonuses are paid. While bonuses may be paid at any time during the year, they often have an industry pattern. For example, the effect of bonus payments is usually seen in around February/March and August/September in the Mining industry and in September in the Financial and insurance services industry.

End of financial year

Each year, wages and salaries data during June and July see increased variability in employer reporting, due to:

- a reset of the financial year in payroll systems, and
- employers finalising their year to date employee earnings information.

These factors can translate to a higher variability in estimates over this period, as well as larger revisions in subsequent releases.

Imputation rollout effect

A new imputation method has been implemented for the first time in the 21 November 2023 release and is experimental in its approach. Imputation is only applied in the latest 3 reference months. No imputation is held in prior reference months.

Interpretation of change between consecutive reference months where imputation does

and does not apply is currently affected by imputation rolling out. For example, in this release, the July 2023 reference period includes approximately $1.5 billion of imputation. While this will be removed in subsequent releases when July 2023 is not within the imputation window, STP data updates to July 2023 may take many months of upwards revision before it nears the originally published level.

The June 2023 reference period has no imputation, and a noticeable difference in the level estimates can be observed. This level change particularly impacts the interpretation of wages and salaries growth from June to July 2023 (temporarily inflating the value by around 1.5%). In this release, users should apply caution when analysing month change estimates for July 2023.

The impact of imputation rolling out may vary across classifications (state/territory, industry, employment size and sector) and between months, as imputation is applied at an employee level. For more detail on the imputation method, see How the data is transformed.

Accuracy

Percentage change movements within this release are calculated from rounded level estimates.

The accuracy of these estimates may be subject to the following sources of error:

- Conceptual misalignment - the Australian tax system is purpose-built and complex, and in some cases, it is difficult to determine how a particular STP item should be used to describe impact on wages and salaries. While all care is taken, some income items are subject to this type of validity error. Coherence with other sources indicates that this has a low impact on the aggregates.

- Reporting error - this is likely to be present in both employee and employer information used. Given the magnitude of STP records submitted every month, a significance approach is taken to identify and adjust for reporting errors that have a significant effect on high level aggregate estimates. Some reporting errors will remain. These errors are considered to have a low impact on the aggregate series and may be corrected in subsequent employer reporting.

- Lag in business characteristic updates - the ABSBR receives updated information when a business entity reports changes to either the Australian Business Register or the ATO, such as new registration, revised classificatory information, or when the business entity reports changes in its business structure or activity. These reporting changes can impact upon the business entity's industry classification (ANZSIC), geographic classification (state or territory) and to a lessor extent its institutional classification (public/private sector). There may be a delay between the real world timing of these changes, and the update of this information in these statistics.

Business register quarterly frames

Employer (or business) characteristics are updated with each quarterly frame and are held constant between quarterly frames.

When changes in the characteristics of businesses such as industry, state and territory and/or employment size occur, there may be some visible impacts at the transition point in the reference months where frame information is updated (January, April, July, October) due to the difference between the consecutive frames.

In these reference months, some changes may relate to changes in the businesses population which relate to business structure or characteristics updates from the ABSBR. These Business Register changes cannot be separated in the estimates.

The timing of these changes relate to when an update occurred on the ABSBR and may not align with the timing of a real world events. There is usually a lag (of at least one quarter) between a real world change and ABSBR updates.

In limited circumstances, the ABS will adjust estimates with respect to frame changes, where they were due to frame errors (such as misclassified industry) and the impact to estimates is considered significant.

Glossary

Show All

Accrual basis

Recording wages when they are earned, accrued or incurred regardless of when payment is made or received.

Annual change

The percentage movement of wages and salaries paid by employers between the reference month and the same month in the previous year.

Australian Bureau of Statistics Business Register (ABSBR)

A register of all Australian businesses and organisations maintained by the Australian Bureau of Statistics (ABS) for the purpose of producing statistical frames and business demography outputs. It contains identifying and classificatory data for each business and organisation.

Information to populate the ABSBR is largely sourced from the Australian Business Register.

The ABSBR consists of two subpopulations, the profiled population and the non-profiled population. The ABSBR uses an economic units model to describe the characteristics of businesses and the structural relationships between related businesses.

Australian Business Number (ABN)

A unique identifier. To be entitled to an Australian Business Number (ABN), an organisation must be one or more of the following:

- a company registered under the Corporations Act 2001
- an entity carrying on an enterprise in Australia
- a government entity
- a non-profit sub-entity for Goods and Services Tax purposes
- a superannuation fund.

A non-resident entity may be entitled to an ABN if they are carrying on an enterprise in

Australia and/or, in the course of carrying on an enterprise, the entity makes sales that are connected with Australia.

Australian Business Register

The data store containing details about businesses and organisations that have registered for an Australian Business Number. More information can be found on the [ABR website (https://abr.gov.au/)](https://abr.gov.au/) .

Cash basis

Recording the wage payment in the pay period when the payment was received by the employee.

Employee

Persons who work for a private or public sector employer, where the employee has received payment in the reference month through Single Touch Payroll (STP) enabled software and reported to the Australian Taxation Office (ATO).

Employer

An organisation with an Australian Business Number that provides employment income to one or more people, and reports through the ATO STP system.

Employment size

The grouping of businesses based on employment benchmarks sourced from the ABSBR.

Enterprise group

An institutional unit covering all the operations within Australia's economic territory of legal entities under common control. Control is defined in Corporations legislation. Majority ownership is not required for control to be exercised. An enterprise group may have one or more TAUs.

Geography

Based on a business' employing locations sourced from the ABR or STP data.

Industry

A homogenous grouping of economic activities undertaken to produce goods and services. The [Australian and New Zealand Standard Industrial Classification (https://www.abs.gov.au/ausstats/abs@.nsf/mf/1292.0)](https://www.abs.gov.au/ausstats/abs@.nsf/mf/1292.0) is used to classify an entity to an industry based on its dominant activity.

Industry division

The broadest grouping of industries within the Australian and New Zealand Standard Industrial Classification. The main purpose of the industry division level is to provide a limited number of categories, which give a broad overall picture of the economy. There are 19 mutually exclusive divisions. For more information see the [Australian and New Zealand Standard Industrial Classification (https://www.abs.gov.au/ausstats/abs@.nsf/mf/1292.0)](https://www.abs.gov.au/ausstats/abs@.nsf/mf/1292.0) .

Month change

The percentage movement of wages and salaries paid by employers between consecutive reference months.

Non-profiled population

The vast majority of businesses included on the ABSBR are in the non-profiled population. Most of these businesses have simple structures that are suitable for ABS statistical purposes at the Australian Business Number (ABN) level. For the non-profiled population, one ABN equates to one business.

Profiled population

For a small number of businesses, the ABN unit is not suitable for ABS economic statistics purposes and the ABS maintains its own economic units structure through direct contact with businesses. These businesses constitute the profiled population and are represented by Type of Activity Units (TAUs). This population consists of large, complex and diverse groups of businesses (known as enterprise groups).

Sector

The Public/Private classification divides the economy into two sectors: Public (government units and units controlled by government); and Private (all other units). For more information, see the [Standard Economic Sector Classifications of Australia (SESCA) (/statistics/classifications/standard-economic-sector-classifications-australia-sesca/latest-release#)](/statistics/classifications/standard-economic-sector-classifications-australia-sesca/latest-release#) release.

Single Touch Payroll (STP)

The Single Touch Payroll (STP) system sends taxation and superannuation information from a business' STP-enabled payroll or accounting software to the ATO as a business runs its payroll.

Termination dates

Termination dates associated with each employee as reported through Single Touch Payroll.

Type of activity unit (TAU)

A TAU consists of one or more business entities, sub entities or branches of a business that can be grouped according to production activity, and can report a minimum set of data items. TAUs are classified according to the industry of their main activity. The relationship between TAUs and their associated legal entities (ABNs) may be one-to-one, many-to-one, or one-to-many.

Wages and salaries

Wages and salaries include wages, salary payments and allowances, labour hire payments and foreign income, as well as the value of payments in kind (where a fringe benefit amount is recorded). Bonuses are typically included where they are reported in the same field as normal payments. Wages are calculated as gross amounts, prior to taxation and deductions.

Wages exclude payments to employee's superannuation as well as severance and termination payments.